

# Interaction of Clinic Roentgenological Characteristics of Dysphasic Coxarthrosis During Endoprosthetics

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## **Abstract**

On the basis of clinical and X-ray inspections of 144 patients with dysplastic coxarthrosis (DC) before and after endoprosthetics with application of cluster analysis cause-effect relationship has been established between parameters of DC before and after endoprosthetics, that enables in the presence of scanty diagnostic factors state the diagnosis with high probability. Has been defined a conditioned operational and postoperational complications.

**Keywords:** *dysplastic coxarthrosis, endoprosthetics, cluster analysis, X-ray*

## **Introduction**

**T**he varied clinical manifestation and variants of arthrosis course, the hidden onset of process, the absence of specific paraclinical findings makes significantly difficult the early diagnosis.

On the basis of our experience about the treatment of patients with DC we are convinced that the clear determination of the degenerative-dystrophic process degree for DC by the clinic roentgenological data relationship is necessary. It will define the choice of optimal treatment method for any individual cases.

## **Aim of Investigation**

Hip joint's pathological changes' clinic roentgenological characteristic relationship's structure before and after operation.

## **Materials and methods**

Under our observation were 144 patients with dysplastic coxarthrosis (aged 23-80 years), for whom the endoprosthetics were carried out.

The methods of investigation were clinic and paraclinical (history, X-ray, immunological, histomorphological investigations and others). The following parameters were analyzed: age, sex, the movement in joint, roentgenometric, clinical, roentgenological, clinic roentgenological indices, arthroplastic data - acetabulum, head, femur, complication during the operation, and postoperative change of limb length. The clinical and roentgenological stages of degenerative-dystrophic process were determined [1]. After the indices were scored according to the *Tab.2*. The relationships structure of factors were determined on the basis of ranking correlation by the cluster analysis [2], the association level was significant, when  $p < 0,001$ .

## **Results**

The data of clinical and X-ray examination of patients before the operation are presented in *Tab.1, 2*. The comparison of our investigation results shows the significant correlation between the DC X-ray, clinical and functional parameters at different stages of degenerative-dystrophic process development. This gives the basis to perform the cluster analysis of corrective matrix with the aim of classification - the object group selection, where the similarity level between the objects is more into the group than between the groups.

STAGE OF DEGENERATIVE-DYSTROPHIC PROCESS-THE CLINICAL PICTURE (RANKS)	CHARACTER OF PAIN	CHARACTER LIMP	LIMITATION OF FUNCTION	ABILITY TO WORK
- 0	0,01418	0,01418	0,03546	0,01418
- 1	0,24823	0,1844	0,19858	0,21986
- 2	0,20567	0,1773	0,17021	0,21986
- 3	0,25532	0,28369	0,20567	0,2695
- 4	0,24823	0,29078	0,36879	0,23404
- 5	0,04255	0,05674	0,03546	0,04965

**Tab.1** *The frequency of patients distribution by the clinical characteristics in the dependence with degenerative-dystrophic process stage before the operation.*

X-RAY INDICES (RANKS)	ACETABULUM AND BONE	FEMORAL HEAD	FEMORAL NECK	WHOLE JOINT
0	0,02083	0	0,00694	0
1	0,08333	0,05556	0,13889	0,02778
2	0,17361	0,13194	0,25694	0,13194
3	0,1875	0,1875	0,23611	0,25694
4	0,34722	0,36111	0,19444	0,3125
5	0,19444	0,26389	0,16667	0,25694
0	0,02083	0	0,00694	0

**Tab.2** *The frequency of patients' distribution by X-ray parameters.*

On the basis of cluster analysis two under-systems of cluster were given-related and unrelated factors. The association level -  $R = 0,21$ .

The following of factors were associated in cluster:

I. The duration of disease, preoperative signs - tredelenburg symptom, the movement in joint - flexion, abduction, adduction, external rotation, the femoral muscle lone - adductional insufficiency, abductional insufficiency, the stages of degenerative-dystrophic process: the character of limp, the character of pain, the limb function limitation, the limitation of ability to work, all X-ray signs.

II. Age, attendant diseases, dysplastic acetabulum, roentgenometric indices - Viberg angle, the situation of

femoral head to lateral edge, the contraction of femoral head.

III. The line of vertical accordance, acetabular index, the shenton line.

IV. The anatomical shortening, functional shortening, the femoral diameter.

V. The operation data - acetabular parameters, tony feet.

VI. The acetabular plasty, postoperative data.

VII. The diaphysis perforation, the diaphysis fracture.

VIII. The postoperative complication - cardiovascular, pneumonia.

- IX. Hematoma, heterogenic ossification.
- X. The loosening of prosthesis acetabular component, the loosening of prosthesis lining feet.
- XI. The acetabular slope angle, the strained nerve.
- XII. Urogenic complication, lymphorrhea.
- XIII. Thrombophlebitis, the postoperative activation.
- XIV. Postoperative factors - abduction, adduction, external rotation, the character of pain, the character of limp, the limitation of limp function, the limitation of ability to work, the movement without stick.
- XV. The duration of rehabilitation.

### **Discussion**

The cluster analysis confirms the high correlation of degenerative-dystrophic process clinical and X-ray

### **Reference**

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## **Взаимодействие клинико-рентгенологических характеристик диспластического коксартроза при эндопротезировании**

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### **РЕЗЮМЕ**

На основе клинико-рентгенологического исследования 144 больных с диспластическим коксартрозом до и после эндопротезирования с применением кластерного анализа установлены причинно-следственные связи между параметрами ДК до и после эндопротезирования, что дает возможность при наличии относительно малых диагностических факторов с высокой вероятностью определить диагноз. Определена взаимообусловленность операционных и постоперационных осложнений.

**Ключевые слова:** коксартроз, эндопротезирование, кластерный анализ, рентген